

SISKOVA, M.; ERDOS, E.

Adsorption from non-electrolyte solutions on solid adsorbents.
Part 3: Adsorption from double solutions of benzol, tuluol,
tetrachlorocarbon and chlorobenzol on silica gel and active carbon.
Coll Cz Chem 26 no.12:3086-3100 D '61.

1. Technische Hochschule fur Chemie und Institut fur physikalische
Chemie, Tschechoslowakische Akademie der Wissenschaften, Prag.

ERDOS, E.

CZECHOSLOVAKIA

No academic degree indicated

Institute of Physical Chemistry, Czechoslovak Academy of Science,
Prague

Prague, Collection of Czechoslovak Chemical Communications, No 10,
October 1962, pp 2273-2283

"Thermodynamic Properties of Sulphates. Part II. Absolute Entropies,
Heat Capacities and Dissociation Pressures." (Part I. appeared in
this Journal, 1962, p 1428 ff.)

NYVLT, J.; ERDOS, E.

P-V-T-relations in solutions of liquid nonelectrolytes. Part 3:
mixture volumes and molecular refraction. Coll Cz Chem 27
no.5:1229-1241 My '62.

1. Forschungsinstitut für anorganische Chemie, Usti nad Labem
und Institut für physikalische Chemie, Tschechoslowakische
Akademie der Wissenschaften, Prag.

ERDOS, E.

Thermodynamic properties of sulfites. Part 1: Standard formation heat. Coll Cz Chem 27 no.6:1428-1437 Je '62.

1. Institute of Physical Chemistry, Czechoslovak Academy of Sciences, Prague.

ERDOS, E.

Thermodynamic properties of sulfates. Part 2: Absolute entropies, heat capacities and dissociation pressures. Coll Cz chem 27 no.10:2273-2283
O '62.

1. Institute of Physical Chemistry, Czechoslovak Academy of Sciences.

ERDÖS, E.

Czechoslovakia

Institute of Physical Chemistry, Czechoslovak
Academy of Science -- Prague

Prague, Collection of Czechoslovak Chemical
Communications, No 9, 1962, pp 2152-2166

"Equilibria in the Systems $\text{SO}_2 - \text{CO}_2 - \text{M}_m\text{O} \cdot$ "

SOLC, K.; ERDOS, E.

Absolute isothermal distillation method of determination of osmotic pressure. Coll Cz Chem 29 no.1:24-35 Ja'64

1. Institute of Macromolecular Chemistry and Institute of Physical Chemistry, Czechoslovak Academy of Sciences, Prague.

ERDOS, E.

Application of thermodynamics in a force field to the state
behavior of real gases. Coll Cz Chem 29 no.10:2406-2411
0 '64.

1. Institute of Physical Chemistry, Czechoslovak Academy of
Sciences, Prague.

ERDOS, Emerich; BAREŠ, Jiri

Eudiometer with a constant and adjustable hydrodynamic resistance. Chem listy 58 no.1:25-27 Ja'64.

1. Ústav fyzikální chemie, Československá akademie věd, Praha.

DVORAK, Karel (deceased); BARES, JIRI; ERDOS, Emreich

Laboratory preparation of hard glass balls and wool. Chem listy
58 no. 4:454-457 Ap '64

1. Institute of Physical Chemistry, Czechoslovak Academy of Sciences,
Prague.

ERDOS, Emerich; BARES, Jiri

Absorbers for kinetic measurements. Chem listy 58 no. 4:457-460 Ap '64.

1. Institute of Physical Chemistry, Czechoslovak Academy of Sciences, Prague.

CZECHOSLOVAKIA

ERDOS, E.; SISKOVA, M

1. Institute of Physical Chemistry, Czechoslovak Academy of Sciences, Prague (for ?); 2. Department of Physical Chemistry, Institute of Chemical Technology, Prague - (for ?)

Prague, Collection of Czechoslovak Chemical Communications, No 2, February 1966, pp 415-426

"Surface tension of binary solutions of non-electrolytes. Part 1. General relations and simplifies models."

CZECHOSLOVAKIA

ERDOS, E; BARES, J

Institute of Physical Chemistry, Czechoslovak Academy of Sciences,
Prague - (for both)

Prague, Collection of Czechoslovak Chemical Communications, No 2,
February 1966, pp 427-434

"Direct conductometric microdetermination of sulfur dioxide at low
concentration in gases."

C.A. ERDOS, Ervin G.

The effect of calcium and atropine on the histamine and acetylcholine contractions of smooth muscle. Ervin Erdos and István Csékh (Univ. Budapest). *Kisbéltes Orvostudomány 1*, 162-6 (1960). Pieces of ileum of guinea pigs, were suspended in Tyrode soln. and CaCl_2 was added to a final concn. of $10^{-3} M$. When histamine-HCl was added to a final concn. of 10^{-5} , the same degree of contraction was observed as with 2×10^{-7} concn. of acetylcholine. In the presence of Ca acetylcholine contractions were stronger, and histamine contractions were weaker. In the presence of CaCl_2 atropine prevented histamine contractions while acetylcholine, increased histamine contraction. 15 references. István Csékh

CA ERDOS, E.G.

Effect of calcium and atropine on histamine- and
acetylcholine-induced contractions of unstriated muscle.
E. G. Erdos and I. Csafko (Univ. Med. School, Budapest,
Hung.). *Arch. intern. pharmacodynamie* 82, 112-17
(1980); cf. C.A. 44, 5011s.—Atropine (1×10^{-4}) in the
presence of Ca inhibits or relaxes histamine contractions
of the guinea pig ileum. Acetylcholine with Ca increases
the histamine contractions and the effect can be relaxed
by atropine, but only in the presence of Ca.
M. L. C. Bernheim

SCHWANER, Karoly, dr.; ERDOS, Gyorgy, dr.

Data on preparing phenoplasts strengthened by glass frames. Magy
kem lap 17 no.10:454-459 0 '62.

1. Kabel es Muanyagyar, Budapest.

ERDOS, Gyula, dr.

Technical problems in intra-cutaneous vaccination. Tuberk. kerdesei
9 no.1:43-48 Feb 56

1. A Békésmegyei Tanács Vándor-röntgen Szolgálatának (vezető főorvos
Erdos Gyula dr.) közleménye.

(BCG VACCINATION, admin.

intro-cutaneous, technical problems (Hun))

(TUBERCULIN REACTION

technical problems in intra-cutaneous inject.(Hun))

(INJECTIONS

intra-cutaneous, technical problems (Hun))

ERDOS, Imre

Economic and scientific cooperation of the countries of the socialist camp. Elektrotechnika 51 no.7/9:309-315 '58.

1. Koho-es Gepipari Miniszterium Iparpolitikai Fozosztalya helyettes vezetoje.

17. ERDOS, I.

17. The achievements of the past five years in the manufacture of electrical machines, by I. Erdos ("Magyar Technika", Hungarian Engineering, No. 8, pp. 50-55, Aug., 1950).

During the past five years our electric motor manufacturing industry elaborated a good many new models, standard ranges, and new fields of application for electric motors. Mention should be made, for instance, of the new enclosed motors in standard range produced by the Ganz Electric Works. By applying a new method of cooling, the weight of a 40 H. P. six pole totally enclosed motor is kept down to the weight of the corresponding open type of the same output built 30 years ago. With a few minor constructional modifications it was also possible to develop from this model a new range of crane motors. The Siemens, Brown, and Ganz Electric Works have already built a few models of the new range compressor resistant totally enclosed flameproof motors. The Ganz Electric Works designed several models for special purposes, such as, for instance, motors for operating the wafel wheel driving mechanism of autoclaves, machine tools,

etc. The Siemens Factory found a good solution for a new small-type pump equipment where the 11 kW motor is built into the drum itself. It fitted with a brake release lever this equipment may also be used to turn down piles. The tests of the first hand drill, designed and constructed by the Dynamo Electric Works, proved satisfactory and the model will soon be produced on a mass production scale. The development of heavy industry in the field of electric motor production is reflected in the large orders for driving equipment such as the 3,000 H. P., 3,000 V, 365 r. p. m. induction motor for rolling mills, furthermore, the 800 kVA, 1,000 cy. 3,000 V high frequency generators, several 4,800 kVA, 375 r. p. m. and 6,200 kVA, 300 r. p. m. turbo-generators are worthwhile mentioning. Important problems are discussed in respect to the production in series of main line electric traction engines. Beside the heavy duty phase and frequency converter locomotives, the engineers of the Ganz Works designed a similar new equipment of lower output for motor coaches. With this model, a set of machines consisting of a three phase synchronous motor and generator is driven through a transformer from a 10,000 V network. The development of electrical equipment for special purposes received a great impulse from the Three and Five Year Plans. The question of the electric supply in isolated single phase induction and this phase commutator motors must also be tackled soon.

ERDOS, I.

621 313 1 002 2 "1915/1950"

10. The achievements of the past five years in the manufacture of electrical machines, by I. Erdős. ("Elektrotechnika" Electrical Engineering -- Vol. 42, No. 7, pp. 201-206, July, 1950).

Reconstruction of the devastated industry began after liberation, first of all, sources of electric energy and electric motors of vital importance to various other branches of industry were restored. Simultaneously, the planned manufacturing of new electric motors for the industrialization of the country was also started. Both the Three Year and the Five Year Plans put forward extraordinary demands for the development of electric machine manufacturing and the modernization of the plants. New up-to-date machines were produced instead of the 98 ton 2,500 H. P. standard gauge railway electric locomotives, the 85 ton 3,200 H. P. electric locomotives with phase and frequency converter are now produced exclusively. The 1,450 H. P. Ward-Leonard motor

33

For the same reason, the modernization of the older types

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

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ERDOS, I.

Letter on the manufacturing of consumers' goods; from the aluminum key to the independent section of the factory. n. 11.

No. 1, Jan. 1955

MUSZAKI ELET

Budapest

SOURCE: Monthly list of East European Accession, (EEAL), LC, Vol. 5,
No. 3, March, 1956

ERDOS, I.

Communications of the Central Laboratory of Klement Gottwald Electric Works. p. 1.
(Elektrotechnika, Budapest, Vol. 48, no. 1/2, Jan/Feb 1955)

SO: Monthly list of East European Accessions (EEAL), LC Vol 4, no. 6, June 1955 Uncl

ERDOS, I.

Some problems of the development of our diesel program. p.193

JARMUVIEK MEZOGAZDASAGI GEPEK. (Gepipari Tudományos Egyesület)
Budapest, Hungary
Vol. 5, no.7/8, 1958

Monthly List of East European Accessions (EEAI) LC., Vol. 8, no.7, July 1959
Uncl.

ERDOS, Jozsef, okleveles mernok, nyugalmazott fomernek

Hungarian highways constructed at the end of the 18th century
and in the first half of the 19th century. Kozl tud sz 14
no. 4:186-189 Ap '64.

ERDOS, Jozsef (Tompá)

Observations on gall-producing chalcid flies living on Hungarian
grasses and their galls. Allattani kozl 50 no.1/4:41-49 '63.

ERDOS, J.

New Chalcidoideae in the collections of Biro (Hymenoptera). In Latin. p.181.
(Magyar Nemzeti Múzeum Természettudományi Múzeum Évkönyve, Vol. 7, 1956,
Budapest, Hungary)

SO: Monthly List of East European Accessions (MEAL) 10. Vol. 6, no. 9, Sept. 1957. Uncl.

HUNGARY/General and Special Zoology - Insects.

P-6

Abs Jour : Ref Zhur - Mol., No 5, 1958, 20891

Author : Erdos, J.

Inst :

Title : Addenda to the study of the Chalcide Fauna of Hungary and
Adjacent Regions. VI. 19. Eulophidae.

Orig Pub : Rovart kozl., 1956, 9, No 1-12, 1-64.

Abstract : No abstract.

Card 1/1

- 2 -

HUNGARY/General and Special Zoology. Insects

P-2

Abs Jour : Ref Zhur - Biol., No 15, 1953, No 68724

Author : Erdos J.
Inst : Hungarian Acad Sci.
Title : New Encyrtides from Hungary

Orig Pub : Acta zool. Acad. Sci. hung., 1957, 3, No 1-2, 5-87

Abstract : A systematic review of encyrtides (Encyrtidae) which are new to Hungarian fauna, including ~70 species of 39 genera. 24 new species are described.

Card : 1/1

HUNGARY/Diseases in Farm Animals. Diseases of Unknown Etiology.

Abs Jour: Ref Zhur-Biol., No 12, 1958, 54975.

are among the clinical symptoms characteristic for the disease. Body temperature is mostly normal, even subnormal. Autopsy reveals serious infiltration of the gastro-intestinal tract, sometimes it is acutely inflamed. There exist no reliable therapeutic and prophylactic methods. Good results were obtained, however, with streptomycin in combination with caffeine and vitamin B₁.

Card : 2/2

26

ERDOS, J.

Symbols to the knowledge of the fauna of Encyrtidae and Aphelinidae.
Acta zool Hung 7 no.3/4:413-423 '61.

FRDOS, J.

"Theory of groups with finite classes."

Kozlemenyei, Budapest, Vol 4, No 1, 1954, p. 127

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

ERDOS, J.

"The theory of groups with finite classes of conjugate elements." In English.
Acta Mathematica, Budapest, Vol 5, No 1/2, 1954, p. 45

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

Erdős, J.

Erdős, J. On direct decompositions of torsion free abelian

groups. Publ. Math. Debrecen 1, 1-4, 1955.

(1955).

In a torsion-free abelian group G , elements a and b are said to be of the same type if the heights $h_p(a)$ and $h_p(b)$ at almost all primes are the same for both a and b . If these heights are both infinite, then a and b are said to differ. The types are partially ordered by the condition: Let this partly ordered set satisfy the condition. Let S be the subgroup generated by all elements whose types are beyond a fixed type α , let T be the subgroup generated by all elements whose types are at or beyond α and let U be the subgroup generated by all elements with types $\leq \alpha$. Then the author shows that G is the direct sum of subgroups, each of which is generated

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type for all its elements, if and only if S is a direct summand of T and $S = T \cap U$. Let G have the further, more specialized property that it is the direct sum of groups of rank 1. Then all direct summands (but not necessarily all subgroups H with the property that $ng \in H$, for an integer n and for $g \in G$, implies that $g \in H$) can be decomposed into direct sums of groups of rank 1. The considerations lead to the construction of indecomposable groups of rank 2. Reference is made to the work of Baer (Duke Math J 3 (1937), 68-122) a portion of which is extended here.

F. Haimo (St. Louis, Mo.)

FW

type for all its elements, if and only if S is a direct summand of T and $S = T \cap U$. Let G have the further, more specialized property that it is the direct sum of groups of rank 1. Then all direct summands (but not necessarily all subgroups H with the property that $ng \in H$, for an integer n and for $g \in G$, implies that $g \in H$) can be decomposed into direct sums of groups of rank 1. The considerations lead to the construction of indecomposable groups of rank 2. Reference is made to the work of Baer (Duke Math J 3 (1937), 68-122), a portion of which is extended here.

F. Haimo (St. Louis, Mo.)

Erds. I. On the structure of ordered real vector spaces.
Publ. Math. Debrecen 4 (1956), 334-343.

Let T be an ordered set of indices t . Let W be a family of well-ordered subsets of T containing $A+B$ with A, B in W . Let f be a real-valued function $f(t)$ with $D(f) = \{t; f(t) \neq 0\}$ in W . Then $V_T(W)$ is the ordered real vector space consisting of these functions ($f > 0$ means $f(t) > 0$ at the first index in $D(f)$). $V_T, V_T(F)$ are the cases in which W consists of all well ordered subsets of T , and all finite subsets of T respectively. $V_T(F)$ is a subspace of V_T .

Hausner and Wendel [Proc. Amer. Math. Soc. 3 (1952), 977-982; MR 14, 566] gave an example of an ordered real vector space which is not isomorphic to any V_T ; the present author points out that it also fails to be isomorphic to any $V_T(F)$. Hausner-Wendel's main theorem is: every real ordered vector space V_0 is isomorphic to a suitable subspace of V_T with T as the ordered set of V_0 's Archimedean-equivalence classes; the present author shows that this subspace can be chosen to be $V_T(F)$ whenever V_0 has countably infinite dimension (in this case V_0 has a basis consisting of suitable vectors, one from each Archimedean-equivalence class).

An explicit construction is given for ordering an arbitrary real vector space (and in all possible ways). It is pointed out that Archimedean vector lattices of countably infinite dimension are not all isomorphic. I. Halperin.

2
1-F/W

7055:

Erdős, Jenő. Torsion-free factor groups of free abelian groups and a classification of torsion-free abelian groups.
Publ. Math. Debrecen 5 (1957), 172-184.

The following four rather surprising theorems are proved. If H is any subgroup of a free abelian group F with F/H torsion-free, then there exists a basis of F which is a complete system of representatives of the cosets of F modulo H if and only if $|F:H| = \text{rank } H$ ($|F:H|$ is the cardinality of F/H ; a complete system of representatives gives precisely one element in each coset). Let F/H and F'/H' be isomorphic torsion-free factor groups of the free abelian groups F and F' . Then there exists an isomorphism ϕ of F onto F' with $\phi(H) = H'$ if and only if $\text{rank } H = \text{rank } H'$. Given a homomorphism ϕ from a free abelian group F onto a direct sum of torsion-free groups G_α ($\alpha \in \Gamma$), then F is a direct sum of subgroups F_α ($\alpha \in \Gamma$).

with $\phi(F_\alpha) = G_\alpha$ for all $\alpha \in \Gamma$. Let H be any subgroup of an abelian group G with G/H torsion-free and nonzero. Then there exists a generating system of G which is a complete system of representatives of the cosets of G modulo H if and only if $|G:H| \geq |H|$. The author then goes on to use these theorems to characterize torsion-free abelian groups in the following manner. If G is torsion-free of cardinality $\leq m$, let G be represented as the factor group of a free abelian group F modulo a subgroup H with $\text{rank } F = \text{rank } H = m$. Let $\{b_\alpha\}$ and $\{b'_\alpha\}$ ($\alpha \in \Gamma$) be bases of F and H , respectively. Then to the group G the author associates the matrix $\|r_{\alpha\beta}\|$ ($\alpha, \beta \in \Gamma$) where $b'_\alpha = \sum_\beta r_{\alpha\beta} b_\beta$ and the $r_{\alpha\beta}$ are integers. He then shows easily that this is a one-one correspondence between torsion-free groups of cardinality $\leq m$ and equivalence classes of row finite m by m matrices over the integers, where two matrices A and B are called equivalent if there exist regular matrices P and Q with $PAQ = B$ (all matrices are over the integers).

D. K. Harrison (Haverford, Pa.)

6461:

Erdős, Jenő, On the splitting problem of mixed abelian groups, Publ. Math. Debrecen 5 (1958), 364-377.

For a p -adic module G without elements of infinite height and a basic submodule B , each element of G can be

represented, essentially uniquely, as the sum of an infinite series, the terms of which are taken from the direct cyclic summands of B . Define the dimension of G to be the rank of B . Let H be a torsion-free p -adic module of countable dimension. Then any extension of a p -adic torsion module T by H to a p -adic module splits ($\text{Ext}(H, T) = 0$) if and only if T is the direct sum of a bounded-order module and a divisible module or H is free. Such splitting takes place for every torsion module T if and only if H is free. Defining a p -adic closure of an abelian group G to be any p -adic module M for which G is a group of generators and for which an independent set of G is independent in M , the author shows that an isomorphism between groups extends to an isomorphism between a pair of their p -adic closures, while an abelian

group has a p -adic closure if and only if its torsion subgroup is a p -group. Moreover, an abelian p -group P always splits its abelian extensions by a fixed torsion-free abelian group H if and only if, in the p -adic module situation, P always splits its p -adic module extensions by a p -adic closure of H . Define p -adic dimension of an abelian group with a p -adic closure to be the dimension of this closure. Let H be a torsion-free group of countable p -adic dimension. Then $\text{Ext}(H, P) = 0$ for every p -group P if and only if the p -adic closure of H is free. If H is a torsion-free group of countable p -adic dimension for at least one prime p , then $\text{Ext}(H, T) = 0$ for every torsion group T if and only if H is free. If H is the group of all sequences of integers, then $\text{Ext}(H, T) \neq 0$, where T is the direct sum of all the distinct cyclic groups of orders which are the powers of p . [Cf. #6460 above; for consistency with the latter, we have written $\text{Ext}(A, B)$ in this review for the author's $\text{Ext}(B, A)$.] F. Haimo (St. Louis, Mo.)

2
1-F/W

ERDOS, Lasso; PAPP, Bela

Instrumental measuring of surface runoff. Idejaras 64 no.3:169-174
My-Je '61.

ERDOS, Laszlo, okleveles villamosmernok

Examination of the electrical properties of reinforced concrete sleepers with special regard to the isolated track circuits. Kozl tud sz 12 no.11: 493-502 N '62.

1. Vasuti Tudomanyos Kutato Intezet tudomanyos munkatarsa.

Erdoes, L.
PALOCZ, I; ZADOR, L; ERDOS, L.

Treatment of hypoproteinemia following acute hemorrhage with
parenteral administration of amino-acid. Magyar Sebészeti
3 no.3:233-236 1950. (CIWL 20:1)

1. Of the Urological Clinic (Director -- Dr. Antal Babics,
University Professor Lecturer), Budapest University, and of the
National Institute of Public Hygiene (Director General -- Dr.
Andras Havas, University Professor).

ERDOS, L.

Immunological and epidemiological considerations on the present epidemics of scarlet fever. Orv. hetil. 94 no.18:478-486 3 May 1953. (CIML 24:5)

1. Doctor. 2. National Public Hygiene Institute (Director General -- Academician Dr. Andras Havas).

ERDOS, Laszlo, dr.

Immunological studies in relation to the diptheria-pertussis-tetanus vaccination of small infants. Nepegesszeguy 41 no.2: 30-35 F '60.

1. Kozlemen az Orszagos Kozegeszsegugyi Intezetbol (foigazgato: Bakacs, Tibor, dr.)

(DIPHTHERIA immunol.)

(WHOOPING COUGH immunol.)

(TETANUS immunol.)

(VACCINATION in inf.& child)

ERDOS, Laszlo, dr.

Recent studies on the immunization of infants. Orv.hetil. 102
no.34:1590-1593 20 Ag '61.

1. Orszagos Kosegeszssegugyi Intezet.

(INFANT NEWBORN immunol)
(VACCINATION in inf & child)

ERDOS, Laszlo, dr.; MAJOR, Janosne

Changes in the immunization of 11-year-old children. Nepe-
geszsegugy 44 no.10:298-301 0 '63.

(VACCINATION) (TETANUS TOXOID)
(DIPHTHERIA TOXOID) (PERTUSSIS VACCINE)
(STATE MEDICINE) (LEGISLATION, MEDICAL)

NYERGES, Georgette; LOSONICZY, Gy.; ERDOS, L.; PETRASS, Gy.

Significance of haemagglutination-inhibiting antibodies in the evaluation of vaccinia reactions. Acta microbiol. acad. sci. Hung. 11 no.2:139-145 '64.

1. State Institute of Hygiene (Director: T. Bakacs), Budapest, and Laszlo Central Hospital for Infectious Diseases (Director: J. Roman), Budapest.

ERDOS, Laszlo

Measuring the evaporation of bare ground by a lysimeter.
Idojaras 68 no.4:201-210 J1-Ag '64.

ERDOS, Laszlo, dr.; SOMOGYI, Szilveszter, dr.; MOINAR, Edit, dr.;
HAINTZ, Gyorgy, dr.

Active and passive immunization against tetanus. Orv. hetil.
105 no.36:1690-1694 6 S '64.

1. Orszagos Kozegeszsegugyi Intezet; Orszagos Traumatologiai
Intezet es a Magyar Nephadsereg Egeszsegugyi Szolgalata.

Erdős, P. Problems and results on the distribution of consecutive primes. Publ. Math. Debrecen 1, 23-35 (1947).

Let $m = \epsilon \log n$, where n is a large integer and ϵ is a small but fixed number; let $f(m)$ be a function which tends to infinity with m and such that $f(m) = o(\log m)$. By the method of Chang [Schr. Math. Inst. u. Inst. Math. Univ. Bonn 4, 33-55 (1948)], the author has proved the existence of a residue class $x \pmod{N}$ such that $(x+k, N) = 1$ and $(x+k, N) \neq 1$ for all k for which $|k| \leq mf(m)$, $k \neq 0$. Making use of the theorem of Linnik [Rec. Math. [Mat. Sbornik] N.S. 15(57), 139-178, 347-368 (1944); these Rev. 6, 260] on the least prime in an arithmetic progression, and a classical inequality of prime number theory, he deduces the following theorem: Let $d_n = p_{n+1} - p_n$ be the difference between two consecutive primes. Then

$$\limsup (\min(d_n, d_{n+1}) / \log n) = \infty,$$

that is, corresponding to every positive constant ϵ , there exist values of n satisfying the inequalities $d_n > \epsilon \log n$, $d_{n+1} > \epsilon \log n$. A novel feature of the argument is that it does not employ the Brun method.

A. L. WHITMAN

Source: Mathematical Reviews, 1950 Vol 11 No. 2

Ergebn. P.

Veroff, P. On some applications of Brun's method. Acta Univ. Szeged. Sect. Sci. Math. 13, 57-61 (1949)

Let $P(k, l)$ denote the least prime in the arithmetic progression $kx + l$, $0 < l < k$, $(l, k) = 1$; let $\phi(k)$ denote the Euler function; let c_1 , c_2 and c_3 be arbitrary positive constants. The author employs the V. Brun method to prove the following three theorems: (I) There exists a constant $c_1 = c_1(c_2)$ and infinitely many integers k so that $P(k, 1) > (1 + c_1 \phi(k) \log k)$ or more than $c_2 \phi(k)$ values of l . (II) There exists a constant $c_1 = c_1(c_2)$ such that for $c_2 \phi(k)$ values of l , $P(k, l) < c_2 \phi(k) \log k$. (III) Let n be sufficiently large. Then there exists a constant $c_1 = c_1(c_2)$ and a sequence of primes $p_0 < p_{r+1} < \dots < p_{r+1} < n$, $r = \{c_2 \log n\}$, so that $p_{i+1} - p_i > c_1$, $i = 0, 1, \dots, r-1$. The proof uses results of Schreimann [Landau, Nachr. Ges. Wiss. Göttingen, Math.-Phys. Kl. 1930, 255-276], Page [Proc. London Math. Soc. (2) 39, 116-141 (1935)] and the author [Proc. Cambridge Philos. Soc. 33, 6-12 (1937)] on the distribution of primes. Theorem III is an improvement on a result obtained by Sierpiński [Colloquium Math. 1, 193-194 (1943); these Rev. 10, 431].

A. L. Whiteman

Source: Mathematical Reviews.

Vol 10, No. 10

LFH

Erdős, P. On the number of terms of the square of a polynomial. *Nieuw Arch. Wiskunde* (2) 23, 63-65 (1949).
 Let $Q(k)$ be the least number of terms occurring among the squares $f(x)^2$ of all polynomials $f(x)$, where $f(x)$ has rational coefficients and exactly k nonzero terms. It is proved that there exist positive constants c, c_1 such that $c < 1$ and $Q(k) < c_1 k^{c_1}$. The proof uses the results [A. Rényi, *Hungarica Acta Math.* 1, 30-34 (1947); these Rev. 9, 182] that $Q(29) \leq 23$ and $Q(ab) \leq Q(a)Q(b)$, and is constructive when an $f_n(x)$ is known for which $f_n(x)^2$ has at most 28 terms. The conjecture of Rényi that $\lim_{k \rightarrow \infty} Q(k) = \infty$ is mentioned.
 L. Tornheim (Ann Arbor, Mich.).

Source: Mathematical Reviews,

Vol 10 No. 6

Erdős, P. Some remarks on set theory. Proc. Amer. Math. Soc. 1, 127-141 (1950).

This paper contains a number of unrelated results in set theory, among which are the following. (1) If n is a natural number, let $f(n)$ denote the maximum number of distinct values that a sum of n ordinals can assume if one permutes the terms in all possible ways. Then

$$f(n) = \max_{k \leq n-1} (2^{k-1} + 1) f(n-k).$$

The values of $f(2), \dots, f(15)$ are 2, 5, 13, 33, 81, 193, 449, 1089, 2673, 6561, 15633, 37249, 88209, 216153; for $x \geq 3$, $f(5x+1) = 81^x$, $f(5x+2) = 193 \cdot 81^{x-1}$, $f(5x+3) = 193^2 81^{x-2}$, $f(5x+4) = 193^3 81^{x-3}$, $f(5x+5) = 33 \cdot 81^x$; and for $n \geq 21$, $f(n) = 81 f(n-5)$. A. Wakulicz [see the preceding review] has treated the same problem by calculating $f(1), \dots, f(20)$ and giving a formula for $f(n)$ for $n > 20$. (11) Let X be a set of n elements, $n \in \mathbb{N}$, and let A, B be two sets whose elements are subsets of X , $A \cap B = \emptyset$, and A and B are said to be *orthogonal* if $|A| + |B| = n$. Let \mathcal{A} and \mathcal{B} be two families of subsets of X such that \mathcal{A} and \mathcal{B} are orthogonal. Let $\mathcal{A} \cup \mathcal{B}$ be the union of \mathcal{A} and \mathcal{B} . Let \mathcal{C} be a family of subsets of X such that \mathcal{C} is orthogonal to $\mathcal{A} \cup \mathcal{B}$. Let \mathcal{D} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{E} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. For each $A \in \mathcal{A}$ let $f(A)$ be the number of $C \in \mathcal{C}$ such that $A \cup C \in \mathcal{D}$. For each $B \in \mathcal{B}$ let $g(B)$ be the number of $C \in \mathcal{C}$ such that $B \cup C \in \mathcal{E}$. Let \mathcal{F} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{G} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{H} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{I} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{J} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{K} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{L} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{M} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{N} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{O} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{P} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{Q} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{R} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{S} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{T} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{U} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{V} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{W} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{X} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{Y} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{Z} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{AA} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{AB} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{BA} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{BB} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{CA} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{CB} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{CB} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{CC} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{CD} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{CD} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{DD} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{DE} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{DE} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{EE} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{EF} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{EF} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{FF} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{FG} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{FG} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{GG} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{GH} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{GH} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{HH} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{HI} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{HI} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{II} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{IJ} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{IJ} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{JJ} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{JK} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{JK} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{KK} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{KL} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{KL} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{LL} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{LM} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{LM} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{MM} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{MN} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}$. Let \mathcal{MN} be the collection of all $A \cup C$, where $A \in \mathcal{A}$ and $C \in \mathcal{C}$. Let \mathcal{NN} be the collection of all $B \cup C$, where $B \in \mathcal{B}$ and $C \in \mathcal{C}</$

(Doklady) Acad. Sci. URSS (N.S.) 40, 175-178 (1943); these Rev. 6, 42.) Then the number of α -complete orthogonal pairs is $2^{2^{\alpha}}$, where $y = \aleph_{\alpha}$. The proof of this makes use of the generalized hypothesis of the continuum. (III) Let S , with $|S| \geq \aleph_k$, be any subset of k -dimensional Euclidean space. Then there exists a subset S_1 of S , with $|S_1| = |S|$, such that the distance between any two points of S_1 is different from that between any other such pair. (IV) The following generalizes a result of König [Theorie der endlichen und unendlichen Graphen . . . Akademische Verlagsgesellschaft, Leipzig, 1936, pp. 220-223]: If G is a graph of order $m \geq \aleph_k$, where every vertex is connected by an edge to each of at least m different vertices, then G is the product of linear factors. (V) Let the set S have power $m \geq \aleph_k$, let $n < m$, and suppose that to every $a \in S$ there corresponds a subset $f(a)$ of S such that $f(a)$ has power less than n and $a \notin f(a)$. The elements a and b of S are said to be independent if $a \notin f(b)$ and $b \notin f(a)$. Find a subset S_1 of S such that S_1 is independent and $|S_1| = m$.

is affirmative, and the author now shows that, assuming the
generalized hypothesis of the continuity of the function, the
always affirmative. In addition to other results, the author
there last mentioned, the paper contains a series of theorems relating
with Hamacher, measure, and ordinal numbers.
E. Bogomol (Rochester, N. Y.)

10-11-50

10-11

Somew

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Bateman, P. T., Chowla, S., and Erdős, P. Remarks on the size of $L(1, \chi)$. Publ. Math. Debrecen 1, 165-182 (1950).

Let (d/n) denote the Kronecker symbol,

$$L_d(1) = \sum_{n=1}^{\infty} \frac{(d/n)}{n},$$

$A = \limsup_{d \rightarrow \infty} L_d(1)(\log \log d)^{-1}$ and $a = \liminf_{d \rightarrow \infty} L_d(1)(\log \log d)^{-1}$ as $d \rightarrow \infty$. B and α are defined similarly as $d \rightarrow -\infty$. The authors prove that $A \leq (18)^{-1}e^{\gamma}$, $B \leq (18)^{-1}e^{\gamma}$, $a \leq 3\pi^2 e^{-\gamma}$, $b \leq 3\pi^2 e^{-\gamma}$, and announce without proof the stronger results $A \leq \frac{1}{2}e^{\gamma}$, $B \leq \frac{1}{2}e^{\gamma}$, $a \leq \frac{1}{2}\pi^2 e^{-\gamma}$, $b \leq \frac{1}{2}\pi^2 e^{-\gamma}$. Slightly weaker results were obtained by Chowla [Proc. London Math. Soc. 1, 50-123 (1949); these Rev. 10, 285]. The proof is based on the sieve method of Linnik and Rényi [J. Math.

Pures Appl. (9) 28, 137-149 (1949); these Rev. 11, 161]. The authors also give a slight numerical improvement of the classical inequality $L(1, \chi) < \log k$, where χ is any non-principal character mod k . The following misprints were communicated by one of the authors: p. 167, line 12, replace $5/4$ by $7/4$; p. 167, second line from bottom, replace $\sum_{n=1}^{\infty} \frac{(d/n)}{n}$ by $\sum_{n=1}^{\infty} \frac{(d/n)}{n}$; p. 171, fifth line from bottom, replace $\log(\frac{1}{2} \log \log x - \log \log \log x)$ by

$$\log(\frac{1}{2} \log \log x - 2 \log \log \log x);$$

p. 174, line 7, replace pe^{γ} by qe^{γ} ; p. 176, line 6, replace be^{γ} by qe^{γ} ; p. 177, last line, replace $\frac{1}{2}b(\log x)^{1+\delta}$ by $\frac{1}{2}b(\log x)^{1+\delta}$; Chowla [3] in the references, replace Proc. Nat. Acad. Sci. India by Proc. Nat. Inst. Sci. India.

H. Heilbronn (Bristol)

Source: Mathematical Reviews,

Vol. 11 No. 4

ERDOS, P.

Erdős, P. Some theorems and remarks on interpolation.

Acta Sci. Math. Szeged 12, Leopoldo Fejér e. Frederico Riesz: LXX annos natis dedicatus, Pars A, 11-17 (1950).

Let $f(x)$ be defined in $[-1, 1]$ and let $L_n(x)$ be the Lagrange interpolation polynomial of degree $n-1$ coinciding with $f(x)$ at the zeros of the Tchebychev polynomial $T_n(x) = \cos n\varphi, x = \cos \varphi$. The following theorems are proved:

(a) Let $f(x)$ be continuous in $[-1, 1]$. Then for almost all x , $n^{-1} \sum_{k=1}^n |L_k(x)| = o(\log \log n)$; (b) assuming that and that in $x, \log \log (|h|^{-1}) |f(x+h) - f(x)| = o(1)$, we have for almost all x , $n^{-1} \sum_{k=1}^n (L_k(x) - f(x))^2 \rightarrow 0$.

G. Szegő

Source: Mathematical Reviews,

Vol 12, No. 3

form

ERDOS,

Erdős, P. Some problems and results in elementary number theory. Publ. Math. Debrecen 2 103-109 (1951).

Let $p_1 < p_2 < \dots$ denote a sequence of primes such that

$$\sum_{p_i \leq x} \frac{1}{p_i} \sim f(x) \rightarrow \infty \text{ as } x \rightarrow \infty$$

also let $v_1 < v_2 < \dots$ denote the integers which are either not divisible by p_i or are divisible by p_i^2 . Then it is proved that

$$v_{i+1} - v_i > c e^{(\log v_i) / \log \log v_i}$$

for infinitely many i . A corollary of this result is

$$u_{i+1} - u_i > c \frac{\log u_i}{(\log \log u_i)^2}$$

where $u_1 < u_2 < \dots$ denotes the sequence of integers $x^2 + y^2$.

It is remarked that the latter result can be proved (without Brun's method) by making use of Landau's theorem that the number of integers $x^2 + y^2 \leq t$ is $O(t/(\log t)^{1/2})$. (The formula $u_{i+1} - u_i < c u_i^{1/2}$ which is due to Chowla and Bombah is easily obtained.)

In the next place let $s_1 < s_2 < \dots$ denote the sequence of squarefree integers. The author states that he can prove

$$\sum_{s_i \leq x} (s_{i+1} - s_i)^{\alpha} = C_{\alpha} x + o(x)$$

for $\alpha < 1$, where A is a certain constant between 2 and 3.

The proof is given for $\alpha = 2$.

STAND

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Source: Mathematical Reviews,

Vol

13

No. 7

ERDOS, P.

Mathematical Reviews
Vol. 14 No. 11
December, 1953
Number Theory.

7-15-54
LL

Davenport, H., and Erdős, P. The distribution of quadratic and higher residues. Publ. Math. Debrecen 2, 252-265 (1952).

Some problems concerning the distribution of k th power residues and nonresidues are discussed. Let d denote the least quadratic nonresidue to the prime p . Then the authors show $d = O(p^{1/2} \log^{\beta} p)$, where $\beta = e^{-1/2}$, which result is slightly better than a result of Vinogradov. The method is based on an elementary lemma on characters, which lemma, however, as the authors remark in a note added later, is already given by Vinogradov [Foundations of the theory of numbers, 5th ed., Gostekhizdat, Moscow-Leningrad, 1949, p. 109; these Rev. 12, 107. Similar results are deduced for $k > 2$, which

for $k \geq 4$ are more precise than those known until now. Further, the authors give for $k \geq 3$ an estimate for the order of magnitude of the least k th power nonresidue in any given one of the $k-1$ classes of nonresidues. They show that a positive number $\eta = \eta(k)$ (depending on k only) exists, such that the estimate $O(p^{1-\eta})$ holds. In the case $k=3$ their result takes the form $O(p^{\gamma+1})$, where $\gamma = 1/2u = 0.383$ approximately, u denoting the solution of the equation

$$\log u + \int_1^{u-1} \frac{\log t}{t+1} dt = \frac{1}{3},$$

and ϵ being an arbitrary positive constant. Finally the distribution of the quadratic residues and nonresidues in sets of consecutive integers is considered. J. F. Koksma.

Erdes, R.

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

44 MR 15 2004

$\mu(x) \leq 2 \text{ с.д.} \mu(1) - 0.1176$ $-\frac{1}{10}$

$$C(x) < x \exp(-c_2 \log x \log \log \log x / \log \log x).$$

positive constants c_1, c_2 . He conjectures that

ERDÖS, P.

Mathematical Reviews
May 1954
Analysis

10-4-54 LL

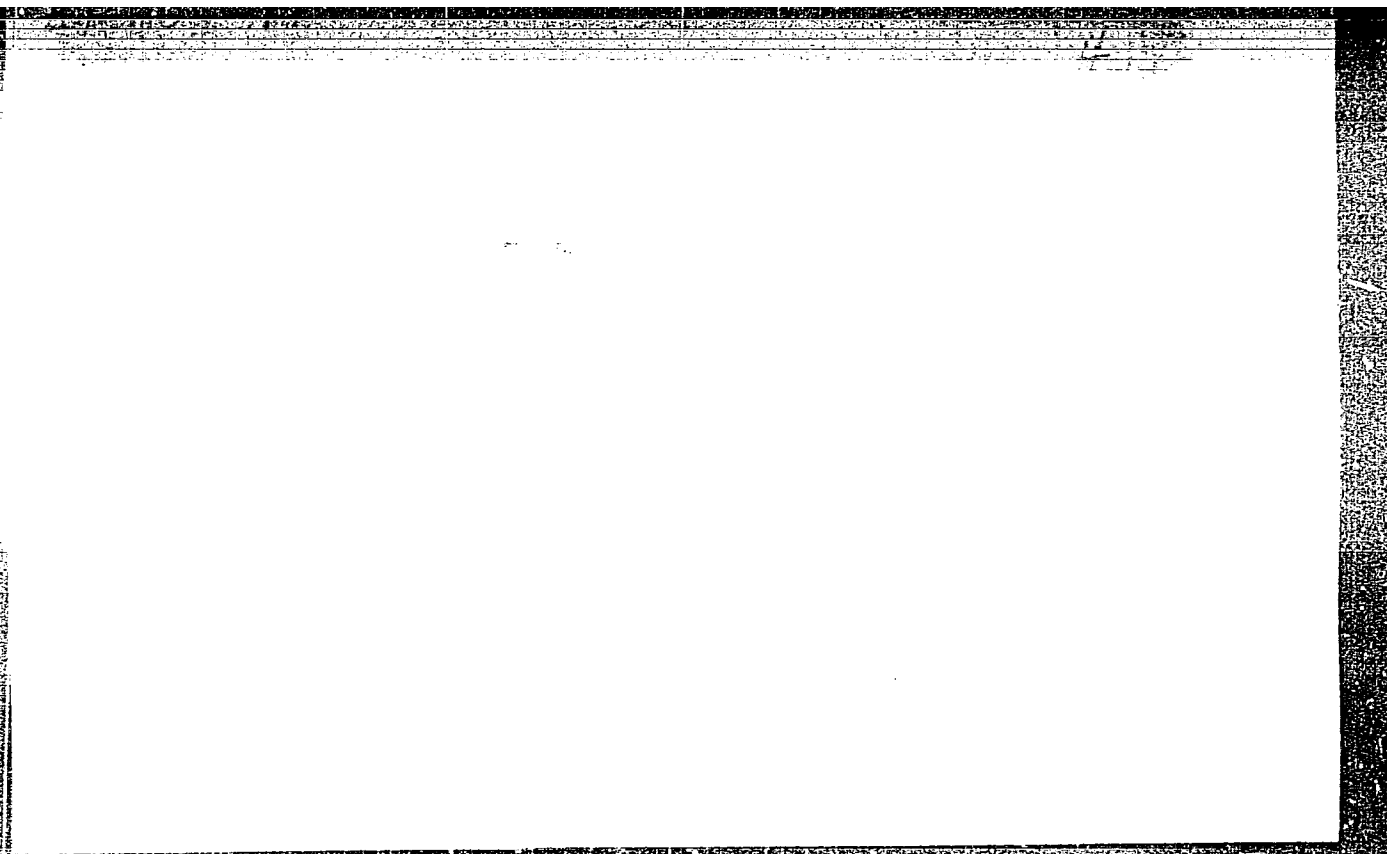
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✓ Erdős, P. On the uniform but not absolute convergence of power series with gaps. Ann. Soc. Polon. Math. 25 (1952), 162-168 (1953).

The author proves that given any increasing sequence $(n_i)_{i=1}^{\infty}$ of positive integers satisfying $\liminf_{i \rightarrow \infty} (n_i - n_{i-1})^{1/(i-n)} = 1$ as $j \rightarrow \infty$, then there exists a power series $\sum_{i=1}^{\infty} a_i z^{n_i}$ converging uniformly in $|z| \leq 1$ and for which $\sum |a_i| = \infty$. Actually the author proves the following stronger result: Under the above conditions there exists a sequence of positive numbers a_i with $\sum a_i = \infty$ such that for almost all t the series $\sum_{i=1}^{\infty} r_i(t) a_i z^{n_i}$ converges uniformly in $|z| \leq 1$ (here $r_i(t)$ denotes the i th Rademacher function). A construction of the sequence a_i is given and the result is established through combinatorial and probabilistic arguments.

A. Dvoretzky (New York, N. Y.).

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CIA-RDP86-00513R00041221

Erdős, P.
Erdős, P. On amicable numbers. Publ. Math. Debrecen 4, 108-111 (1955). I - F/W
It is proved that the set of amicable numbers has density zero. (The numbers a and b are amicable in case the sum-of-divisors function σ satisfies $\sigma(a) = \sigma(b) = a + b$.) This improves an earlier estimate of H. J. Kanold [Math. Z. 61, 180-185 (1954); MR 16, 337]. S. M. I. Niven.

ERDOS, P

4
Erdős, P., and Turán, P. On the role of the Lebesgue functions in the theory of the Lagrange interpolation. 1-F/W
Acta Math. Acad. Sci. Hungar. 6, 47-66 (1955). (Russian summary)

NS Let $A = (x_{\nu n})$ ($\nu = 1, 2, \dots, n; n = 1, 2, \dots$) be a triangular matrix of interpolation points where $-1 \leq x_{\nu n} \leq 1$ and all $x_{\nu n}$ in one row are distinct. Let $f(x)$ be continuous; we form the polynomials

$$L_n(f) = \sum_{\nu=1}^n f(x_{\nu n}) l_{\nu n}(x),$$

where $l_{\nu n}(x)$ denote the fundamental polynomials of the Lagrange interpolation. The authors investigate the following important class $A(\beta)$ of matrices A . There exists a number β , $0 < \beta < 1$, such that for the "Lebesgue constants" $M_n = \max_{-1 \leq x \leq 1} |l_{\nu n}(x)|$ the following inequalities hold:

$$\limsup_{n \rightarrow \infty} M_n n^{-\beta-\epsilon} < c_1(\epsilon), \quad \limsup_{n \rightarrow \infty} M_n n^{-\beta+\epsilon} > c_2(\epsilon),$$

(1) (over)

Erdős P. and Turán P.

4

where $c_1(\epsilon)$, $c_2(\epsilon)$ are positive constants. The following results are obtained. (a) Let $\mu < \beta/(\beta+2)$; there exists an $f(x) \in \text{Lip } \gamma$ such that $L_n(f)$ is unbounded in $[-1, 1]$ as $n \rightarrow \infty$. (b) Let $\gamma > \beta$, $f(x) \in \text{Lip } \gamma$; then the sequence $L_n(f)$ is uniformly convergent in $[-1, 1]$. (c) Let $\gamma > \beta/(\beta+2)$; there exists a special matrix $A \in A(\beta)$ such that the corresponding $L_n(f)$ converge uniformly in $[-1, 1]$ whenever $f(x) \in \text{Lip } \gamma$. (d) Let $\gamma < \beta$; there exists a special matrix $A \in A(\beta)$ and a special $f(x) \in \text{Lip } \gamma$ such that $L_n(f)$ is unbounded in $[-1, 1]$. G. Szegő (Stanford, Calif.).

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Smil

ERDOS, P.

On exploitation, science, and superstructure. p. 102. Vol. 115, no. 2,
Feb. 1956 TERMESZET ES TARSADALOM. Budapest, Hungary

Source: East European Accession List. Library of Congress
Vol. 5, No. 8, August 1956

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ERDŐS, P.

1. Erdős, P. and Erdős, P. Part II
Publ. Math. Debrecen 4 (1958), 96-100.
The authors prove that $P(n) \sim 1/2 P(n-1)$.

ERDŐS, P.

3

Erdős, P. and Rényi, A. On some combinatorial problems. *Math. Magyarica* 4 (1959) 25-35.

2/11/59

Let n be a positive integer and k a positive integer. If every k -element subset of a set of n elements occurs at least once in a family of k -element subsets, then $C_k(n) \geq n(n-1)/[k(k-1)]$ and in case of equality the k -element subsets form a balanced incomplete block design with $k=1$.

The authors investigate the asymptotic behavior of $C_k(n)$ as $n \rightarrow \infty$ for fixed k . Putting $C_k(n)/[n(n-1)/k(k-1)] = \alpha_k(n)$, they show that $\alpha_k(n) \rightarrow 1$ as $n \rightarrow \infty$ for fixed k .

4534:

Erdős, Pál. Remarks on two problems of the Matematikai Lapok. Mat. Lapok 7 (1956), 10-17. (Hungarian. Russian and English summaries)

"Let $L_n = [\log_r n / \log_4 n]$ ($\log_r n$ denotes the r times iterated logarithm). Then for every ϵ and $n > n_0$ there exists an $a < n$ for which

$$\varphi(a) + \varphi(a+1) + \dots + \varphi(a+L_n) < \epsilon a.$$

On the other hand for every $\eta > 0$

$$\lim_{a \rightarrow \infty} \frac{\varphi(a) + \varphi(a+1) + \dots + \varphi(a + (1+\eta)L_n)}{a} = \infty.$$

Further, it is stated without giving the proof that

$$\lim_{a \rightarrow \infty} \frac{1}{a} \left(\varphi(a) + \dots + \varphi \left(a + \frac{\log_3 a}{\log_4 a - \log_5 a} + \frac{c \log_3 a}{(\log_4 a)^2} \right) \right) = \frac{\alpha^c}{\alpha},$$

$$\alpha = \prod_p (1 - p^{-1})^{-1/p}.$$

Several other results are stated without proof; here we mention only one: Put $k_n = \log_3 n / \log_4 n$ and let i_1, i_2, \dots, i_{k_n} be any permutation of the integers $1, 2, \dots, k_n$. Then for $n > n_0$ there exists an $a < n$ so that

$$\varphi(a+i_1) > \varphi(a+i_2) > \dots > \varphi(a+i_{k_n}).$$

On the other hand, for $n > n_0(\epsilon)$

$$\varphi(n) > \varphi(n+1) > \dots > \varphi(n + (1+\epsilon)k_n);$$

can not hold. The same results hold for $\sigma(n)$ instead of $\varphi(n)$.
Author's summary

E R 1105, 11

Math

Erdős, P.; and Rényi, A. On the number of zeros of successive derivatives of analytic functions. Acta Math. Acad. Sci. Hungar. 7 (1956), 125-144. (Russian summary)

Let $N_k(r)$ denote the number of zeros of $f^{(k)}(z)$ in $|z| \leq r$. The authors prove several theorems on the asymptotic behavior of $N_k(r)$, generalizing previous results of Polya [Bull. Amer. Math. Soc. 49 (1943), 178-191; MR 4, 192] and Evgrafov [Interpoljacionnaya zadaca Abelya-Gončarova, Gostehizdat, Moscow, 1954; MR 16, 1104]. They also discuss r_k , the modulus of the zero of $f^{(k)}(z)$ that is closest to the origin. Theorem 1. If $f(z)$ is regular in $|z| < 1$, then $\liminf k^{-1} N_k(r) \leq K(r)$, where $K = K(r)$ is the positive root of $r = K(1 + K)^{-1-1/K}$. More precisely, this is true when k runs through the values for which $f^{(k)}(0) \neq 0$, and in this form it is best possible. For an entire function, Theorem 1 gives $\liminf k^{-1} N_k(1) = 0$. If the growth of the entire function is restricted, more can be said. Theorem 2. Let $g(r) \rightarrow \infty$ and let h be its inverse function. Then

$$\liminf \{ \log M(r) / g(r) \} = 1,$$

then $\liminf k^{-1} h(k) N_k(1) = 1$. This is best possible. Let f be any entire function. Then $\liminf k^{-1} h(k) N_k(1) = 1$. Then $\liminf k^{-1} h(k) N_k(1) = 1$.

4645:

Erdős, Pál. Remarks on a paper of T. Kővári. Mat. Lapok 7 (1956), 214-217. (Hungarian. Russian and English summaries)

Let z_1, z_2, \dots be an arbitrary sequence of complex numbers and $n_1 < n_2 < \dots$ an arbitrary infinite sequence whose complementary sequence is infinite. The author proves that there exists an entire function $f(z)$ so that $f^{(n_k)}(z_k) = 0$ for $k = 1, 2, \dots$

The following two problems are raised: 1. Let H_1, H_2, \dots be an infinite sequence of sets. No H_k has a finite limit point. Does there always exist a sequence of integers $n_1 < n_2 < \dots$ and an entire function $f(z)$ so that the roots of $f^{(n_k)}(z) = 0$ contain H_k for $k = 1, 2, \dots$? 2. Does there exist an entire function $f(z)$ so that for every sequence $n_1 < n_2 < \dots$ the union of the set of all the roots of $f^{(n_k)}(z) = 0$ is everywhere dense in the plane?

From the author's summary

~~Erdős, P.~~ On a high-indices theorem in Borel summability. ~~Acta Math. Acad. Sci. Hungar.~~ 7 (1956), 265-281. (Russian summary) ~~1-F/W~~

Throughout this review the series $\sum a_k$ satisfy a gap condition of the form " $a_k=0$ except if $k=n_j$ " where $n_{j+1}-n_j > cn_j^c$ for some constant $c>0$. If $\sum a_k$ is Euler summable, the work of Erdős and of Meyer-König shows that $\sum a_k$ converges [cf. Meyer-König and Zeller, Math. Z. 66 (1956), 203-224; MR 18, 733]. It is not known if the corresponding result for Borel summability is true. But the present paper shows that Borel summability of $\sum a_k$ does imply convergence under the additional hypothesis that the series $\sum 1/(n_{j+1}-n_j)$ converges. The significance of this result is that there is no order condition on the a_k as in Pitt's theorem [Proc. London Math. Soc. (2) 44 (1938), 243-288, Theorem 17] and its extension by Meyer-König [Math. Z. 57 (1953), 351-352; MR 14, 865].

J. Korevaar (Madison, Wis.).

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1/1

ERDOS, P.

On the maximum modulus of entire functions. In English. p.305.
(Acta Mathematica, Vol. 7, no. 3/4, 1956, Budapest, Hungary)

SC: Monthly List of East European Accessions (EEAL) IC. Vol. 6, no. 9, Sept. 1957. Uncl.

ERDOS, P.

Erdis, P. et Karamata, I. Sur la majorabilite d'une

fonction

On suppose que la fonction $f(s)$ est holomorphe dans la region $\sigma > 1$ et que

(i) $f(s) = O(1)$

(ii) $f(s) = o(1)$ as $\sigma \rightarrow 1^+$

moreover if (i) and (ii) hold, then, as $\sigma \rightarrow 0^+$, $e^{-s}W(s) = o(1) + A^*$, where A^* is the least majorability constant. It is shown how that concept of majorable C and these theorems are related to quadrature theorems, to Tauberian theorems, and to the prime number theorem.

R. P. Agarwal (Allahabad, U. P.)

ERDOS, F.

ERSOD, P. Remarks about two problems in Matematikai Lapok. p. 10.

Vol. 7, no. 1/2, 1957
MATEMATIKAI LAPOK
SCIENCE
HUNGARY

So: East European Accessions, Vol. 5, No. 9, Sept. 1956

ERDOS, PAL

Erdős, Pál. On some geometrical problems. Mat. Lapok 8 (1957), 86-92. (Hungarian)

1-F/W

2
The paper gives lots of geometric problems and conjectures of combinatoric type concerning mainly the number of different distances between n points and the number of certain curves and surfaces (straight lines, circles, planes, hyperplanes) going through two, three, etc., points of given sets. It contains many references to results obtained previously (many of them by the author); also a few proofs or sketches of proofs are given. (It is somewhat disturbing that at some places references to footnotes and those to formulas are confounded. The paper is written in an agreeable conversational style.)

J. Aczél (Debrecen)

sm

ERDUS, J.

Erdos, P. and Rényi, A. On the evolution of random graphs. Publ. Math. Debrecen 1961, 6, 291-306.

Erdos, P. and Hyslop, J. The evolution of random graphs. Publ. Math. Debrecen 1961, 6, 291-306.

Ann. Inst. Fourier (Grenoble) 1961, 11, 17-23.

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all

3
Erdős, P.; and Fodor, G. Some remarks on set theory.

VI. Acta Sci. Math. Szeged 18 (1957), 243-260.

Let E be a given uncountable set of power m and let R be a relation on E . For x in E , let $R(x)$ denote the set of elements y in E for which xRy holds. Two distinct elements of E , x and y , are called independent if $x \notin R(y)$ and $y \notin R(x)$. A subset F of E is called free if F has only one element, or if F has more than one element and each two are independent. Let B be a system of subsets of E and I a p -additive ideal of B , $p \leq m$. (A non-empty subset ICB is a p -additive ideal if the sum of any system of power smaller than p , of elements of I , is also in I , and if $X \in I$, $Y \in B$, $Y \subset X$ imply $Y \in I$.) Let $\{x\} \in B$ and $\{x\} \in I$ for every $x \in E$. Let one of the following conditions hold for the sets $R(x)$: (A) There is a cardinal number $n < m$ such that $|R(x)| < n$ for every x in E ; (B) E is a metric space and $d(x, R(x)) > 0$, where $d(x, R(x))$ is the distance from x to the set $R(x)$.

Numerous results about the following problem are given. (i) If A is a system of sets of $B - I$, does there exist a free subset E' of E such that $X \cap E' \in B - I$ for every $X \in A$? For example, an affirmative answer is given in the case where $m > \aleph_0$ is less than the first weakly inaccessible aleph, $B = 2^E$, I is an $\aleph_{\gamma+1}$ -additive ideal.

Erdős, P., and Fodor, G.

($\aleph_{\alpha+1} \leq m$), $|A| = \aleph_0$, and $|R(x)| < \aleph_0$ for every x in E .
 A second problem is also considered: (ii) Let K be a class of subsets of E . When does there exist a relation R for which condition (A) holds and there is no free subset $X \in K$ with respect to R ? A sample result obtained pertaining to (ii) is the following: If $|K| = m$ and every element of K is of power m , then there exists a relation R , with $|R(x)| \leq 1$ for every x in E , for which there is no free set in K .

S. Ginsburg (Hawthorne, Calif.)

ERDOS, P; RENYI, A.

On singular radii of power series. In English. p. 159

MAGYAR TUDOMANYOS AKADEMIA MATEMATIKAI KUTATO INTIZETENEK KOZLEMENYEI.
PUBLICATIONS OF THE MATHEMATICAL INSTITUTE OF THE HUNGARIAN ACADEMY OF
SCIENCES. Budapest, Hungary. Vol. 3, no. 3/4, 1958

Monthly list of East European Accessions (EEAI). LC. Vol. 9, no. 1, Jan.,
1960.

Uncl.

On the Approach of Closed Convex Curves

Erdős, Pál; und Vincze, István. Über die Annäherung geschlossener, konvexer Kurven. Mat. Lapok 9 (1958), 19-36. (Hungarian. Russian and German summaries)

In this clearly written and comprehensible paper, the authors give, after an expository introduction on minimal circumscribed and maximal inscribed circles of convex curves and about their distances and parallel-curves, a new proof of the unicity of the minimal annulus containing a convex curve (and having its center inside the curve). This proof is based on a remark of H. Lebesgue. Finally, the authors show that an equilateral triangle cannot be approximated arbitrarily by Tschirnhaus-curves with n foci (thus solving a problem of E. Vázsonyi), but they give an example of a convex curve containing one straight segment for which such an approximation is possible and they ask whether such convex curves containing two straight segments exist. (It is a pity that there are no illustrative figures in the paper. Sometimes also the lack of brackets enclosing the references is somewhat disturbing.)

J. Aczél (Debrecen)

3
1-F/W

Erdős, P.; and Hajnal, A. On the structure of set-mappings. Acta. Math. Acad. Sci. Hungar. 9 (1958), 111-131. W

The symbol $(m, n, t) \rightarrow p$ stands for the following proposition. Let S be a set of power m . Let f be a mapping defined on the set of all subsets of S of cardinal t , such that $f(X) \subseteq S$, $f(X) \cap X = \emptyset$, and $|f(X)| < n$. Then S has a subset S' of power p such that $f(X) \cap S' = \emptyset$ for all $X \subseteq S$ (and $|X| = t$).

The symbol $(m, n, \omega) \rightarrow p$ stands for the corresponding proposition for a mapping defined on the set of all finite subsets of S . The negations are indicated by \leftrightarrow . [For background, see P. Erdős, Proc. Amer. Math. Soc. 1 (1950), 127-141; MR 12, 14; and Erdős and Fodor, Acta. Sci. Math. Szeged. 18 (1957), 243-260; MR 19, 1152.]

Typical results for the case in which m is infinite: (A) If t is infinite, then $(m, 2, t) \leftrightarrow t$. (B) If $m < \aleph_\omega$, then $(m, 2, \omega) \leftrightarrow \aleph_0$. (C) Under the generalized continuum hypothesis (g.c.h.), $(\aleph_{\alpha+k}, \aleph_\alpha, h) \rightarrow \aleph_{\alpha+1}$ for finite k . (D) Under the g.c.h. $(m, n, k) \rightarrow m$ if m is singular, $n < m$, and k is finite. (E) If m is strongly inaccessible, and if a set of this power admits a Ulam measure, then $(m, n, \omega) \rightarrow m$ for $n < m$.

Open problems: (1) $(\aleph_\omega, 2, \omega) \rightarrow \aleph_0$? (note: $\leftrightarrow \aleph_1$). (2) $(\aleph_3, \aleph_0, 3) \rightarrow \aleph_2$? (note: $\rightarrow \aleph_1$ but $\leftrightarrow \aleph_3$). (3) $(\aleph_2, 2, 3) \rightarrow \aleph_1$? (note: $\rightarrow \aleph_0$ but $\leftrightarrow \aleph_2$). L. Gillman (Princeton, N. J.)

ENDOS, P.

Problems and results of the theory of interpolation. I. In English. p. 381

ACTA MATHEMATICA. (Magyar Tudományos Akademia) Budapest, Hungary. Vol. 9,
no. 3/4, 1958.

Monthly list of East European Accessions, (EEAI) LC, Vol. 9, no. 1, Jan. 1960.

Uncl.

ERDOS, Pal (Budapest); GALLAI, Tibor (Budapest)

On maximal paths and circuits of graphs. In English. Acta mat. Hung.
no. 3/4:337-356 '59. (REAI 9:5)

1. Corresponding member, Hungarian Academy of Sciences (For Erdos).
(Topology)

ERDOS, P; RENYI, A.

On the central limit theorem for samples from a finite population. In English. p. 49.

MAGYAR TUDOMANYOS AKADEMIA MATEMATIKAI KUTATO INTÉZETÉNEK KOZLEMÉNYEI.
PUBLICATIONS OF THE MATHEMATICAL INSTITUTE OF THE HUNGARIAN ACADEMY OF
SCIENCES. Budapest, Hungary. Vol. 4, no. 1, 1959

Monthly list of East European Accessions (EEAI). IC. Vol. 9, no. 1, Jan.,
1960.

Uncl.

ERDOS, P.

SCIENCE

periodicals: ACTA ARITHMETICA Vol. 5, no. 1, 1959

ERDOS, P. Remarks on number theory. I. On primitive ω -abundant numbers. p. 25.

Monthly List of East European Accessions (MEAI) LC Vol. 8, no. 5
May 1959, Unclass.

ERDOS, P.

SCIENCE

periodicals: ACTA ARITHMETICA Vol. 5, no. 1, 1959

ERDOS, P. On the probability that n and $g(n)$ are relatively prime.
p. 35.

Monthly List of East European Accessions (EEAI) LC Vol. 8, no. 5
May 1959, Unclass.

ERDOS, P.

SCIENCE

periodicals: / CTA ARITHMETICA Vol. 5, no. 1, 1959

ERDOS, P. On a question of additive number theory. p. 45.

Monthly List of East European Accessions (EIAI) LC Vol. 8, no. 5
May 1959, Unclass.

ERDOS, P.

Remarks on number theory. II. Some problems on the ϕ function. p. 171.

ACTA ARITHMETICA. (Polska Akademia Nauk. Instytut Matematyczny) Warszawa, Poland.
Vol. 5, no. 2, 1959

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 2, Feb. 1960

Uncl.

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S/043/60/000/13/05/016
C111/C222

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AUTHOR: Erdős, P.

TITLE: On an Asymptotic Inequality on the Theory of Numbers

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1960, No. 13, pp. 41 - 49

TEXT: Let $A(n) = \sum_{\substack{m \leq n \\ m = xy \\ 1 \leq x \leq \sqrt{n}, 1 \leq y \leq \sqrt{n}}} 1$

Theorem 1 : For a certain $\varepsilon > 0$ there exists an $n_0 = n_0(\varepsilon)$ so that for all $n > n_0$ it holds :

$$\frac{n}{(\ln n)^{1+\varepsilon}} (e \ln 2)^{\frac{\ln \ln n}{\ln 2}} < A(n) < \frac{n}{(\ln n)^{1-\varepsilon}} (e \ln 2)^{\frac{\ln \ln n}{\ln 2}}$$

Card 1/2

On an Asymptotic Inequality on the Theory
of Numbers

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C111/C222

Let ε_n be the density of the integers which have at least one divisor in the interval $(n, 2n)$.

$$\text{Theorem 2 : } (\ln n)^{-\varepsilon} (e \ln 2)^{-\frac{\ln \ln n}{\ln 2}} < \varepsilon_n < (\ln n)^{\varepsilon} (e \ln 2)^{-\frac{\ln \ln 2}{\ln 2}} .$$

The author mentions A. Vinogradov and Professor Linnik.
There are 2 non-Soviet references.

Card 2/2

X

ERDOS, Pal; RENYI, Alfred

On the evolution of random graphs. Mat kut kozl MTA 5 no.1/2:17-61
'60. (EEAI 10:1)
(Topology) (Probabilities)

ERDOS, Pal

On sets of distances on n points in Euclidean space. Mat kut kozl
MTA 5 no.1/2:165-169 '60. (EEAI 10:1)
(Numbers, Theory of) (Aggregates)
(Spaces, Generalized)

ERDOS, P. (Budapest)

About an estimation problem of Zahorski. Col math 7 no.2:167-170
'60. (EEAI 10:1)

(Numbers, Theory of) (Series)

ERDOS, P. (Budapest); TAYLOR, S.J. (Birmingham)

Some problems concerning the structure of random walk paths. Acta
mat Hung 11 no.1/2:137-171 '60. (EEAI 9:12)

1. Corresponding member of the Academy, Budapest (for Erdos)
 (Lattice theory) (Numbers, Theory of)
 (Probabilities) (Convergence)
 (Distribution (Probability theory))
 (Functions) (Topology)

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S/044/62/000/001/005/061
C111/C444

165500

AUTHORS: Erdős, Pál; Gallai, Tibor.

TITLE: Graphs with points of given power

PERIODICAL: Referativnyy zhurnal, Matematika, no. 1, 1962, 47,
abstract 1A295. (Mat. lapok, 1960, 11, no. 4, 264 - 274)

TEXT: A sequence a_1, \dots, a_n ($n \geq 2$) is called realisable, if there is a graph without loops or multiple borders, the points of which are P_1, P_2, \dots, P_n and in which the power of the point P_i is equal to a_i ($i = 1, 2, \dots, n$). The following theorem is proved:
A sequence of non-negative integers a_1, \dots, a_n ($n \geq 2$), satisfying the condition $a_1 \geq a_2 \geq \dots \geq a_n$, is realisable, if and only if the following conditions are satisfied:

a) $\sum_{i=1}^n a_i$ is an even number;

Card 1/2

ERDESH, P. [Erdős, P.]

One asymptotic inequality in the theory of numbers. Vest.LGU 15
no.13:41-49 '60. (MIRA 13:7)
(Numbers, Theory of)

ERDOS, Pal; GALLAI, Tiber

On the minimal number of vertices representing the edges of a graph.
Mat kut kez1 MTA 6 no.1/2:181-203 '61.

(Topology)

ERDOS, P.; RENYI, Alfred

On a classical problem of probability theory. Mat kut kozl MTA 6
no.1/2:215-220 '61.

(Probabilities)

ERDOS, Pal

Some unsolved problems. Mat kut kozl MTA 6 no.1/2:221-254 '61.

(Numbers, Theory of) (Combinations) (Geometry)
(Probabilities)

ERDOS, P. (Budapest); SCHINZEL, A. (Warszawa)

Distributions of the values of some arithmetical functions. Acta
arithmetica 6 no.4:473-485 '61.